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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/516,311	08/12/2005	Tadahiro Ishizaka	263194US3PCT	3893

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EXAMINER	
CHANDRA, SATISH	

ART UNIT	PAPER NUMBER
1763	

NOTIFICATION DATE	DELIVERY MODE
07/17/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/516,311	ISHIZAKA ET AL.	
	Examiner	Art Unit	
	Satish Chandra	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 April 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9,10,12 - 14, 15 - 18 and 21 - 31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9,10,12 - 14, 15 - 18 and 21 - 31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 December 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 9, 10, 12, 13, 15 - 18, 22, 25 and 28 are rejected under 35 U.S.C. 102(a) as being anticipated by Shirakawa et al (US 6,380,518).

Shirakawa et al discloses:

Regarding claims 9, 15, 17 and 18, a processing apparatus, comprising a chamber (not labeled, having a cross-section of triangular shape as seen from the direction perpendicular to the bottom wall, not shown), Figs 14, 15, 17, 18, 25, Column 13, lines 10 – 15 and 49 – 60)); a gas supply section 110, 115, 120 provided to said chamber having a plurality of gas supply holes arranged approximately parallel with the direction of width of the processing chamber and for supplying a predetermined gas (air) into said chamber; the air board 113 regulates the air stream into virtually an equilateral triangular gas flowing region 99 above the hot plate 58 wherein the air board 113 is formed of a long and narrow rectangular board and exhaust openings 123, 124 and 125 provided to said chamber so as to face said gas supply section 120, 110 and 115, connected to exhaust means (not shown) for exhausting an interior of said chamber,

wherein said chamber has a gas flow passage extending from said gas supply opening (for example 110) to said exhaust opening (for example 124), and wherein said gas flow passage has a transverse cross-sectional area with at least a width that decreases in inverse proportion to a distance from said gas supply opening along said gas flow passage.

Regarding claim 10, gas supply openings134, 135 and 136 (Fig 18) are connected to gas supply means (not shown).

Regarding claims 12 and 16, since the air (gas) flows smoothly in the gas flowing region 99, neither spiral nor stagnant streams occur (Column 18, lines 14 – 18). It is therefore inherent that the thickness of a boundary layer is approximately constant, said boundary layer being formed when said gases are supplied into said chamber, on a wall of said chamber that extends along a direction of flow of said gases.

Regarding claims 13 and 16, since the air (gas) flows smoothly in the gas flowing region 99, neither spiral nor stagnant streams occur (Column 18, lines 14 – 18). It is inherent that the thickness of a boundary layer is approximately constant, said boundary layer being formed when said gases are supplied into said chamber, on a substrate placed in said chamber approximately parallel with a direction of flow of said gases.

Regarding claims 22 and 28, the height of the transverse cross-sectional area remains constant along said gas flow passage.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 14, 15, 23, 24, 25 – 27 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shirakawa et al (US 6,380,518) in view of Eversteijn et al (US 3,750,620),

Shirakawa et al was discussed above **but does not disclose:**

Regarding claims 14 and 24, a chamber having a bottom wall configured to support the substrate.

Regarding claims 23 and 29, the height of said transverse cross-sectional area varies along said gas flow passage such that said transverse cross-sectional area decreases in inverse proportion to the distance from said gas supply opening along said gas flow passage.

Regarding claims 25 - 27, said exhaust opening 185 (Fig 25) is provided on said chamber at a location on a vertex portion of the approximately triangular shaped cross-section of said chamber; said gas supply opening 183 is provided on said chamber at a location on a side of the approximately triangular shaped cross-section of said chamber that is opposite to said vertex portion; and said gas supply opening extends along substantially an entire length of the side of the

approximately triangular shaped cross-section of said chamber that is opposite to said vertex portion.

Eversteijn et al discloses:

Regarding claims 14 and 24, a reactor 1 (Fig 1) having a bottom wall configured to support the substrate,

Regarding claim 23, a reactor tube 1 (Fig 1) wherein the height tapers in the direction of the gas stream (Column 4, lines 20 – 25),

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a bottom wall in a reaction chamber to support a substrate in the apparatus of Shirakawa et al as taught by Eversteinj et al; and provide a chamber wherein the height of the transverse cross-sectional area varies along the gas flow passage such that the cross-sectional area decreases in inverse proportion to the distance from the said gas supply opening in the apparatus of Shirakawa et al as taught by Eversteinj et al.

The motivation for providing a bottom wall in the apparatus of Shirakawa et al is for support a substrate as taught by Eversteijn et al.

The motivation for providing a chamber wherein the height of the transverse cross-sectional area varies along the gas flow passage such that the cross-sectional area decreases in inverse proportion to the distance from the said gas supply opening it to improve the rate of performance of processes in the apparatus of Shirakawa et al as taught by Eversteinj et al.

Claims 15, 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shirakawa et al (US 6,380,518) in view of Eversteijn et al (US 3,750,620),

Shirakawa et al discloses:

Regarding claims 15, 30 and 31, the chamber has a cross-section that has an approximately triangular shape (Fig 25) as seen from a direction approximately perpendicular to the bottom wall; the chamber has an exhaust opening 185 that is provided on the chamber at a location on a vertex portion of the approximately triangular shaped cross-section of the chamber; and the gas supply opening 183, 184 is provided on the chamber at a location on a side of the approximately triangular shaped cross-section of the chamber that is opposite to the vertex portion.

Shirakawa et al does not disclose:

the chamber has a bottom surface supporting the substrate within the chamber,

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a bottom wall in a reaction chamber to support a substrate in the apparatus of Shirakawa et al as taught by Eversteinj et al,

The motivation for providing a bottom wall in the apparatus of Shirakawa et al is for support a substrate as taught by Eversteijn et al.

Response to Arguments

Applicant's arguments with respect to claims 9, 10, 12 – 14, 15 – 18 and 21 – 31 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Satish Chandra whose telephone number is 571-272-3769. The examiner can normally be reached on 8 a.m. - 4:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, Primary Examiner, Jeffrie R. Lund, can be reached on 571-272-1437. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Satish Chandra

Jeffrie R. Lund
Primary Examiner

SC
6/27/2007